

Application Ser. No.: 10/821,154

Title: COMPOSITION COMPRISING A PHOSPHATE BINDER AND ITS PREPARATION
Supplemental Response to Office Action dated: August 20, 2008

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please amend the claims as follow, with traverse :

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

Application Ser. No.: 10/821,154

Title: COMPOSITION COMPRISING A PHOSPHATE BINDER AND ITS PREPARATION

Supplemental Response to Office Action dated: August 20, 2008

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled) .

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (Currently amended) A composition comprising at least: an inorganic binder having calcium silicate sites which are connected the one with the other by alumina-silica phosphate bonds, the calcium silicate sites acting as cross-linking sites for the alumina-silica phosphate bonds with a weight ratio Al_2O_3/SiO_2 ranging from 0.3:1 and 10:1, and silicon containing fibers with a length of less than $1000\mu m$, the weight content of silicon containing fibers with a length of less than $1000\mu m$ in the composition after its hardening and after removal of the possible free water being of at least 0.5%.

29. (Original) The composition of claim 28, which comprises silicon containing fibers with an average (in weight) length of less than $500\mu m$, the weight content of silicon containing fibers with an average length of less than $500\mu m$ in the composition after its hardening and after removal of the possible free water being of at least 0.5%.

30. (Original) The composition of claim 28, which comprises silicon containing fibers with an average (in weight) length of more than $10\mu m$.

31. (Original) The composition of claim 28, which comprises silicon containing fibers with an average (in weight) length of more than $20\mu m$.

32. (Original) The composition of claim 28, which comprises silicon containing fibers with an average (in weight) length comprised between $25\mu m$ and $300\mu m$.

Application Ser. No.: 10/821,154

Title: COMPOSITION COMPRISING A PHOSPHATE BINDER AND ITS PREPARATION
Supplemental Response to Office Action dated: August 20, 2008

33. (Original) The composition of claim 28, which comprises silicon containing fibers with an average (in weight) length between 50 μm and 250 μm .

34. (Original) The composition of claim 28, in which the silieon containing fibers with a length of less than 1000 μm are substantially not reactive with the binder.

35. (Original) The composition of claim 28, in which the silicon containing fibers with a length of less than 500 μm are substantially not reactive with the binder.

36. (Original) The composition of claim 28, in which the silicon containing fibers with a length of less than 1000 μm are not reactive with the binder.

37. (Original) The composition of claim 28, in which the silicon containing fibers with a length of less than 500 μm are not reactive with the binder.

38. (Original) The composition of claim 28, which, after hardening and removal of free water, comprises from 1% up to 85% by weight, silicon containing fibers with a length of less than 1000 μm , which are substantially not reactive with the binder.

39. (Original) The composition of claim 28, which, after hardening and removal of free water, comprises from 1% up to 85% by weight, silicon containing fibers with a length of less than 1000 μm , which are not reactive with the binder.

40. (Original) The composition of claim 28, which, after hardening and removal of free water, comprises from 2% up to 75% by weight, silicon containing fibers with a length of less than 1000 μm , which are not reactive with the binder.

41. (Original) The composition of claim 28, which, after hardening and removal of free water, comprises from 1% up to 85% by weight, silicon containing fibers with a length of less than 500 μm , which are not reactive with the binder.

42. (Original) The composition of claim 28, which, after hardening and removal of free water, comprises from 2% up to 75% by weight, silicon containing fibers with a length of less than 500 μm , which are not reactive with the binder.

43. (Original) The composition of claim 28, which, after hardening and removal of free water, comprises from 20% up to 65% by weight silicon containing fibers with a length of less than 1000 μm which are substantially not reactive with the binder.

44. (Original) The composition of claim 28, which, after hardening and removal of free water, comprises from 30% up to 60% by weight silicon containing fibers with a length of less than 500 μm , which are not reactive with the binder.

45. (Original) The composition of claim 28, which further comprises silica flour with a particle size of less than 500 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being of at least 0.5%.

46. (Original) The composition of claim 28, which further comprises silica flour with an average (in weight) particle size comprised between 2 and 100 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being comprised between 1 and 10%.

47. (Original) The composition of claim 28, which further comprises silica flour with an

average (in weight) particle size comprised between 2 and 100 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being comprised between 2 and 8%.

48. (Original) The composition of claim 28, which further comprises silica flour with an average (in weight) particle size comprised between 5 and 60 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being comprised between 2 and 8%.

49. (Original) The composition of claim 28, which further comprises silica flour with an average (in weight) particle size comprised between 10 and 50 μm the weight content of silica flour in the composition after its hardening and after removal of the possible free water being comprised between 2 and 8%.

50. (Original) The composition of claim 28, which further comprises crystallized alumina silicate particles which are substantially not reactive with the binder and which have an average (in weight) particle size comprised between 5 and 100 μm , the weight content of non reactive crystallized alumina silicate in the composition after its hardening and after removal of the possible free water being comprised between 1 and 10%.

51. (Original) The composition of claim 28, which further comprises crystallized alumina silicate particles which are substantially not reactive with the binder and which have an average (in weight) particle size comprised between 5 and 100 μm , the weight content of non reactive crystallized alumina silicate in the composition after its hardening and after removal of the possible free water being comprised between 2 and 8%.

52. (Original) The composition of claim 28, in which the calcium silicate sites of the inorganic

binder act as cross-linking sites for the alumina-silica phosphate bonds with a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.6:1 and 6:1.

53. (Original) The composition of claim 28, in which the weight ratio calcium silicate site/ SiO_2 present in the alumina-silica phosphate bonds of the inorganic binder is greater than 1.

54. (Original) The composition of claim 28, in which the weight ratio calcium silicate site/ SiO_2 present in the alumina-silica phosphate bonds of the inorganic binder is greater than 1.5.

55. (Original) The composition of claim 28, in which the calcium silicate sites of the inorganic binder are calcium meta silicate sites having a substantially acicular nature with a length/diameter ratio from 2/1 to 50/1.

56. (Original) The composition of claim 28, in which the calcium silicate sites of the inorganic binder are calcium meta silicate sites having a substantially acicular nature with a length/diameter ratio from 3/1 to 20/1.

57. (Original) The composition of claim 55, in which the calcium meta silicate sites has an average length from 10 μm to 10 mm.

58. (Original) The composition of claim 56, in which the calcium meta silicate sites has an average length from 50 μm to 5 mm.

59. (Original) The composition of claim 28, in which the weight ratio calcium silicate sites/alumina-silica phosphate bonds of the inorganic binder is comprised between 0.1 and 1.1.

Application Ser. No.: 10/821,154

Title: COMPOSITION COMPRISING A PHOSPHATE BINDER AND ITS PREPARATION

Supplemental Response to Office Action dated: August 20, 2008

60. (Original) The composition of claim 28, in which the weight ratio calcium silicate sites/alumina-silica phosphate bonds of the inorganic binder is comprised between 0.3 and 0.9.

Application Ser. No.: 10/821,154

Title: COMPOSITION COMPRISING A PHOSPHATE BINDER AND ITS PREPARATION
Supplemental Response to Office Action dated: August 20, 2008

61. (Original) The composition of claim 28, in which the weight ratio calcium silicate sites/alumina-silica phosphate bonds of the inorganic binder is comprised between 0.4 and 0.7.

62. (Cancelled)

63. (Cancelled)

64. (Cancelled)

65. (Cancelled)

66. (Cancelled)

67. (Cancelled)

68. (Cancelled)

69. (Cancelled)

70. (Cancelled)

71. (Cancelled)

72. (Cancelled)

73. (Cancelled)

Application Ser. No.: 10/821,154

Title: COMPOSITION COMPRISING A PHOSPHATE BINDER AND ITS PREPARATION

Supplemental Response to Office Action dated: August 20, 2008

74. (Cancelled)

75. (Cancelled)

76. (Cancelled)

77. (Cancelled)

78. (Cancelled)

79. (Cancelled)

80. (Cancelled)

81. (Cancelled)

82. (Cancelled)

83. (Cancelled)

84. (Cancelled)

85. (Cancelled)

86. (Cancelled)

87. (Cancelled)

Application Ser. No.: 10/821,154

Title: COMPOSITION COMPRISING A PHOSPHATE BINDER AND ITS PREPARATION

Supplemental Response to Office Action dated: August 20, 2008

88. (Cancelled)

89. (Cancelled)

90. (Cancelled)

91. (Cancelled)

92. (Cancelled)

93. (Cancelled)

94. (Cancelled)

95. (Cancelled)

96. (Cancelled)

97. (Cancelled)

98. (Cancelled)

99. (Cancelled)

100. (Cancelled)

101. (Cancelled)

Application Ser. No.: 10/821,154

Title: COMPOSITION COMPRISING A PHOSPHATE BINDER AND ITS PREPARATION

Supplemental Response to Office Action dated: August 20, 2008

102. (Cancelled)

103. (Cancelled)

104. (Cancelled)

105. (Cancelled)

106. (Cancelled)

107. (Cancelled)

108. (Cancelled)

109. (Cancelled)

110. (Cancelled)

111. (Cancelled)

112. (Cancelled)

113. (Cancelled)

114. (Cancelled)

115. (Cancelled)

116. (Currently amended) A process for the preparation of an inorganic binder a composition according to claim [[1]] 28 comprising at least ~~said an inorganic~~ binder having calcium silicate sites which are connected the one with the other by alumina-silica phosphate bonds, the calcium silicate sites acting as cross-linking sites for the alumina-silica phosphate bonds with a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.3:1 and 10:1, and silicon-containing fibers with a length of less than 1000 μm , the weight content of silicon containing fibers with a length of less than 1000 μm in the composition after its hardening and after removal of the possible free water being of at least 0.5%, in which said inorganic binder is prepared by mixing in which water insoluble calcium silicate particles ~~[[are mixed]]~~ with an acid alumina-silica phosphate solution at a temperature lower than 50°C , said acid alumina-silica phosphate solution comprising solubilized SiO_2 and having a pH of less than 2, said alumina-silica phosphate solution having a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.3:1 and 10:1.

117. (Previously presented) The process of claim 116, in which water insoluble calcium silicate particles are mixed with an acid alumina-silica phosphate solution at a temperature lower than 50°C ., said acid alumina-silica phosphate solution comprising solubilized SiO_2 and having a pH of less than 1.5, said alumina-silica phosphate solution having a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.6:1 and 6:1.

118. (Previously presented) The process of claim 116, in which water insoluble calcium silicate particles are mixed with an acid alumina-silica phosphate solution at a temperature lower than 50°C , said acid alumina-silica phosphate solution comprising solubilized SiO_2 and having a pH comprised between 0.5 and 1.5, said alumina-silica phosphate solution having a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.6:1 and 6:1.

119. (Previously presented) The process of claim 116, in which the weight ratio water insoluble calcium silicate particles/solubilized SiO_2 present in the alumina-silica phosphate solution is

greater than 1.

120. (Previously presented) The process of claim 116, in which the weight ratio water insoluble calcium silicate particles/solubilized SiO_2 present in the alumina-silica phosphate solution is greater than 1.5.

121. (Previously presented) The process of claim 116, in which the calcium silicate particles are calcium meta silicate particles having a substantially acicular nature with a length/diameter ratio from 2/1 to 50/1.

122. (Previously presented) The process of claim 116, in which the calcium silicate particles are calcium meta silicate particles having a substantially acicular nature with a length/diameter ratio from 3/1 to 20/1.

123. (Previously presented) The process of claim 121, in which the calcium meta silicate particles have an average length from 10 μm to 10 mm.

124. (Previously presented) The process of claim 122, in which the calcium meta silicate particles have an average length from 50 μm to 5 mm.

125. (Previously presented) The process of claim 116, in which the calcium silicate particles act as cross-linking sites for alumina-silica phosphate bonds.

126. (Previously presented) The process of claim 116, in which the weight ratio calcium silicate particles/alumina-silica phosphate solution is comprised between 0.1 and 1.1.

127. (Previously presented) The process of claim 116, in which a filler is mixed with the

calcium silicate particles before being mixed with the acid alumina-silica phosphate solution.

128. (Previously presented) The process of claim 116, in which a filler is mixed to the mixture calcium silicate/alumina-silica phosphate solution, before its hardening.

129. (Previously presented) The process of claim 116, in which the hardening of the binder is carried out at a temperature comprised between 0°C. and 50°C.

130. (Previously presented) The process of claim 116, in which the binder is hardened under pressure.

131. (Previously presented) The process of claim 116, in which the amount of calcium silicate added to the acid silica alumina phosphate solution is such that the weight ratio calcium silicate/SiO₂ present in the acid solution is comprised between 1 and 5.

132. (Previously presented) The process of claim 116, in which the amount of calcium silicate added to the acid silica alumina phosphate solution is such that the weight ratio calcium silicate/SiO₂ present in the acid solution is comprised between 1.5 and 3.5.

133. (Previously presented) The process of claim 116, in which the amount of calcium silicate added to the acid silica alumina phosphate solution is such that the weight ratio calcium silicate/SiO₂ present in the acid solution is greater than 2.

134. (Previously presented) The process of claim 116, in which the acid silica alumina phosphate solution is prepared by mixing a silica-alumina mixture with an acid consisting substantially only of phosphoric acid.

135. (Previously presented) The process of claim 134, in which further silica and alumina is added to the formed acid solution.

136. (Previously presented) The process of claim 116, in which the acid silica alumina phosphate solution is prepared by mixing silica particles with an acid consisting substantially only of phosphoric acid, and by mixing thereafter to the silica containing solution alumina particles.

137. (Previously presented) The process of claim 116, in which the acid silica alumina phosphatic solution is prepared by mixing alumina particles with an acid consisting substantially only of phosphoric acid, and by mixing thereafter to the alumina containing solution silica particles.

138. (Previously presented) The process of claim 116, in which the acid silica alumina phosphate solution is prepared at least by mixing precipitated silica with an acid solution with a pH lower than 1.5.

139. (Previously presented) The process of claim 116, in which inert silicon containing fibers with a length of less than 1000 μm are mixed to the mixture calcium silicate/alumina-silica phosphate solution, before its complete hardening.

140. (Previously presented) The process of claim 116, in which inert silicon containing fibers with a length of less than 1000 μm are mixed to the alumina-silica phosphate solution before the adding of water insoluble calcium silicate particles.

141. (Previously presented) The process of claim 116, in which inert silicon containing fibers with a length of less than 1000 μm and water insoluble calcium silicate particles are added

together to the alumina-silica phosphate solution.

142. (Currently amended) A process for the manufacture of a product comprising a support provided with at least a hardened layer comprising an inorganic binder ~~according to claim 1, said binder~~ having calcium silicate sites which are connected the one with the other by alumina-silica phosphate bonds, the calcium silicate sites acting as cross-linking sites for the alumina-silica phosphate bonds with a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.3:1 and 10:1, in which at least partly a face of the support is contacted with a composition ~~before its complete hardening;~~
~~whereby said composition~~ comprising at least:

an inorganic binder having calcium silicate sites which are connected the one with the other by alumina-silica phosphate bonds, the calcium silicate sites acting as cross-linking sites for the alumina-silica phosphate bonds with a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.3:1 and 10:1,

silicon containing fibers with a length of less than 1000 μm , the weight content of silicon containing fibers with a length of less than 1000 μm in the composition after its hardening and after removal of the possible free water being of at least 0.5%,

and

a further filler, and

in which the composition is hardened on said support.

143. (Previously presented) The process of claim 142, in which the composition contacting the support comprises silicon containing fibers with a length of less than 100 μm , the weight content of silicon containing fibers with a length of less than 1000 μm in the composition after its hardening and after removal of the possible free water being of at least 0.5%.

144. (Previously presented) The process of claim 142, in which at least a portion of a face of the

support not contacted with the composition is provided with a water repellent coating.

145. (Previously presented) The process of claim 144, in which the water repellent coating is a fluoro silicon coating.

146. (Previously presented) The process of claim 142, in which at least one face of the support intended to be not contacted with the composition is provided with a water repellent coating.

147. (Previously presented) The process of claim 146, in which at least partly a face of the support is provided with a water repellent coating prior contacting at least partly a face of the support with the composition.

148. (Previously presented) The process of claim 142, in which at least a portion of a face adjacent to a portion of a face provided with a hardened layer are provided with a water repellent coating.

149. (Previously presented) The composition of claim 28, which further comprises silica flour with a particle size of less comprised between 2 and 400 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being of at least 0.5%.

150. (New) A product comprising at least a hardened layer prepared by hardening a composition comprising at least:

an inorganic binder having calcium silicate sites which are connected the one with the other by alumina-silica phosphate bonds, the calcium silicate sites acting as cross-linking sites for the alumina-silica phosphate bonds with a weight ratio

$\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.3:1 and 10:1;

silicon-containing fibers with a length of less than 1000 μm , the weight content of silicon containing fibers with a length of less than 1000 μm in the composition after its hardening and after removal of the possible free water being of at least 0.5%;

and

a further filler,

said hardened layer comprising:

an inorganic binder having calcium silicate sites which are connected the one with the other by alumina-silica phosphate bonds, the calcium silicate sites acting as cross-linking sites for the alumina-silica phosphate bonds with a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.3:1 and 10:1;

silicon-containing fibers with a length of less than 1000 μm ; and

a further filler.

151. (New) The product of claim 150, in which the hardened layer covers at least partly a face of a support element.

152. (New) The product of claim 150, in which the hardened layer covers at least partly a face of a support comprising a core which can be subjected to a water swelling, and in which at least partly a face not covered by hardened layer is provided with a water repellent coating.

153. (New) The product of claim 152, in which the water repellent coating is a silicon containing water repellent coating.

154. (New) The product of claim 153, in which the water repellent coating is a fluoro silicon coating.

155. (New) The product of claim 150, in which the hardened layer covers at least partly a face of a support comprising a core which can be subjected to a water swelling, and in which the faces not with a hardened layer are provided with a water repellent coating.

156. (New) The product of claim 155, in which the water repellent coating is a silicon containing water repellent coating.

157. (New) The product of claim 150, in which the hardened layer covers at least partly a face of a support comprising a core which can be subjected to a water swelling, said face being provided with a water repellent coating.

158. (New) The product of claim 150, in which the hardened layer comprises at least: an inorganic binder having calcium silicate sites which are connected the one with the other by alumina-silica phosphate bonds, the calcium silicate sites acting as cross-linking sites for the alumina-silica phosphate bonds with a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.3:1 and 10:1, and silicon containing fibers with a length of less than 1000 μm , the weight content of silicon containing fibers with a length of less than 1000 μm in the composition after its hardening and after removal of the possible free water being of at least 0.5%.

159. (New) The product of claim 158, which comprises silicon containing fibers with an average (in weight) length of less than 500 μm , the weight content of silicon containing fibers with an average length of less than 500 μm in the composition after its hardening and after removal of the possible free water being of at least 0.5%.

160. (New) The product of claim 150, in which the hardened layer comprises silicon containing fibers with an average (in weight) length of more than 10 μm .

161. (New) The product of claim 150, in which the hardened layer comprises silicon containing fibers with an average (in weight) length of more than 20 μm .

162. (New) The product of claim 150, in which the hardened layer comprises silicon containing fibers with an average (in weight) length comprised between 25 μm and 300 μm .

163. (New) The product of claim 150, in which the hardened layer comprises silicon containing fibers with an average (in weight) length between 50 μm and 250 μm .

164. (New) The product of claim 150, in which the hardened layer comprises silicon containing fibers with a length of less than 1000 μm which are substantially not reactive with the binder.

165. (New) The product of claim 150, in which the hardened layer comprises silicon containing fibers with a length of less than 500 μm which are substantially not reactive with the binder.

166. (New) The product of claim 150, in which the hardened layer comprises silicon containing fibers with a length of less than 1000 μm , which are not reactive with the binder.

167. (New) The product of claim 150, in which the hardened layer comprises silicon containing fibers with a length of less than 500 μm which are not reactive with the binder.

168. (New) The product of claim 150, in which, after hardening and removal of free water, the hardened layer comprises from 1% up to 85% by weight, silicon containing fibers with a length of less than 1000 μm , which are substantially not reactive with the binder.

169. (New) The product of claim 150, in which, after hardening and removal of free water, the hardened layer comprises from 1% up to 85% by weight, silicon containing fibers with a length

of less than 1000 μm , which are not reactive with the binder.

170. (New) The product of claim 150, in which, after hardening and removal of free water, the hardened layer comprises from 2% up to 75% by weight, silicon containing fibers with a length of less than 1000 μm , which are not reactive with the binder.

171. (New) The product of claim 150, in which, after hardening and removal of free water, the hardened layer comprises from 1% up to 85% by weight, silicon containing fibers with a length of less than 500 μm , which are not reactive with the binder.

172. (New) The product of claim 150, in which, after hardening and removal of free water, the hardened layer comprises from 2% up to 75% by weight, silicon containing fibers with a length of less than 500 μm , which are not reactive with the binder.

173. (New) The product of claim 150, in which, after hardening and removal of free water, the hardened layer comprises from 20% up to 65% by weight silicon containing fibers with a length of less than 1000 μm which are substantially not reactive with the binder.

174. (New) The product of claim 150, in which, after hardening and removal of free water, the hardened layer comprises from 30% up to 60% by weight silicon containing fibers with a length of less than 500 μm , which are not reactive with the binder.

175. (New) The product of claim 150, in which the hardened layer further comprises silica flour with a particle size of less than 500 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being of at least 0.5%.

176. (New) The product of claim 150, in which the hardened layer further comprises silica flour

with a particle size of less comprised between 2 and 400 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being of at least 0.5%.

177. (New) The product of claim 150, in which the hardened layer further comprises silica flour with an average (in weight) particle size comprised between 2 and 100 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being comprised between 1 and 10%.

178. (New) The product of claim 150, in which the hardened layer further comprises silica flour with an average (in weight) particle size comprised between 2 and 100 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being comprised between 2 and 8%.

179. (New) The product of claim 150, in which the hardened layer further comprises silica flour with an average (in weight) particle size comprised between 5 and 60 μm , the weight content of silica flour in the composition after its hardening and after removal of the possible free water being comprised between 2 and 8%.

180. (New) The product of claim 150, in which the hardened layer further comprises silica flour with an average (in weight) particle size comprised between 10 and 50 μm the weight content of silica flour in the composition after its hardening and after removal of the possible free water being comprised between 2 and 8%.

181. (New) The product of claim 150, in which the hardened layer further comprises crystallized alumina silicate particles which are substantially not reactive with the binder and which have an average (in weight) particle size comprised between 5 and 100 μm , the weight content of non

reactive crystallized alumina silicate in the composition after its hardening and after removal of the possible free water being comprised between 1 and 10%.

182. (New) The product of claim 150, in which the hardened layer further comprises crystallized alumina silicate particles which are substantially not reactive with the binder and which have an average (in weight) particle size comprised between 5 and 100 μm , the weight content of non reactive crystallized alumina silicate in the composition after its hardening and after removal of the possible free water being comprised between 2 and 8%.

183. (New) The product of claim 150, in which the calcium silicate sites of the inorganic binder act as cross-linking sites for the alumina-silica phosphate bonds with a weight ratio $\text{Al}_2\text{O}_3/\text{SiO}_2$ ranging from 0.6:1 and 6:1.

184. (New) The product of claim 150, in which the weight ratio calcium silicate site/ SiO_2 present in the alumina-silica phosphate bonds of the inorganic binder is greater than 1.

185. (New) The product of claim 150, in which the weight ratio calcium silicate site/ SiO_2 present in the alumina-silica phosphate bonds of the inorganic binder is greater than 1.5.

186. (New) The product of claim 150, in which the calcium silicate sites of the inorganic binder are calcium meta silicate sites having a substantially acicular nature with a length/diameter ratio from 2/1 to 50/1.

187. (New) The product of claim 150, in which the calcium silicate sites of the inorganic binder are calcium meta silicate sites having a substantially acicular nature with a length/diameter ratio from 3/1 to 20/1.

188. (New) The product of claim 186, in which the calcium meta silicate sites has an average length from 10 μm to 10 mm.

189. (New) The product of claim 187, in which the calcium meta silicate sites has an average length from 50 μm to 5 mm.

190. (New) The product of claim 150, in which the weight ratio calcium silicate sites/alumina-silica phosphate bonds of the inorganic binder is comprised between 0.1 and 1.1.

191. (New) The product of claim 150, in which the weight ratio calcium silicate sites/alumina-silica phosphate bonds of the inorganic binder is comprised between 0.3 and 0.9.

192. (New) The product of claim 150, in which the weight ratio calcium silicate sites/alumina-silica phosphate bonds of the inorganic binder is comprised between 0.4 and 0.7.